tions **71***a* to **71***f* are formed on the quartz glass substrates **2** and **3** which constitute the passage element, in the section above the fluid passage **70**, to be arranged in the direction normal to the direction of the fluid passage **7**.

[**0106**] In addition to the operation and effect of the micro fluid passage element **1** and **20**, the micro fluid passage element **70** of this embodiment has a plurality of convex lens-shaped projecting portions **71***a* and **71***f* on both surfaces of the element substrate, with light being made incident from the projecting portion on one side, and transmitted light being detected from the projecting portions on the other side. With this structure, the incident light can be converged and thus the detection sensitivity can be improved. It should be noted that although six convex lens-shaped projecting portions are formed in this embodiment, the shape and number thereof are not limited to those of this embodiment, but can be varied as long as they have a similar function to that of this embodiment in a certain range.

[**0107**] As described above, according to the present invention, there is provided a micro fluid passage element having a fluid passage for instrumental analysis, capable of performing an optical detection in a wavelength region from ultraviolet to visible light, and being easily reduced in size.

[**0108**] Additional advantages and modifications will readily occur to those skilled in the art. Therefore, the invention in its broader aspects is not limited to the specific details and representative embodiments shown and described herein. Accordingly, various modifications may be made without departing from the spirit or scope of the general inventive concept as defined by the appended claims and their equivalent.

1. A micro fluid passage element comprising:

a laminated film formed by interposing an alkali-ion containing glass layer between a pair of silicon layers from both surfaces; and

a pair of quartz glass substrates adhered on both surfaces of the laminated film as to be joined together as an integral body in a manner that surfaces of the pair of quartz glass substrates, which are located on a joining side, face to each other,

wherein the micro fluid passage element has a piercing hole as a fluid passage, said piercing hole being defined by the surfaces of the pair of quarts glass substrates, which are located on the joining side and the cross sections of the laminated film, as they face respectively each other, as a groove is made in the surface of at least one of the pair of quarts glass substrates to an arbitrary depth.

2. A micro fluid passage element comprising:

a laminated film formed by interposing a silicon oxide film and an alkali-ion containing glass layer laminated, between a pair of silicon layers from both surfaces; and

a pair of quartz glass substrates adhered on both surfaces of the laminated film as to be joined together as an integral body in a manner that surfaces of the pair of quartz glass substrates, which are located on a joining side, face to each other,

wherein the micro fluid passage element has a piercing hole as a fluid passage, said piercing hole being defined by the surfaces of the pair of quarts glass substrates, which are located on the joining side and the cross sections of the laminated film, as they face respectively each other, as a groove is made in the surface of at least one of the pair of quarts glass substrates to an arbitrary depth.

3. The micro fluid passage element according to claim 2, wherein a reflection film is formed on at least one of the surfaces of the pair of quartz glass substrates, which are located on a non-joining side.

4. The micro fluid passage element according to claim 3, wherein a reflection film is made of one of a polysilicon thin film and a metal thin film.

5. The micro fluid passage element according to claim 3, wherein one of a light reflection layer or a light absorption layer having a plurality of light transmitting openings in the surfaces of the pair quartz glass substrates, which are located on the non-joining side, at positions which sandwich the fluid pass, is formed on the non-joining surface.

6. The micro fluid passage element according to claim 5, wherein a scale is marked close to the light transmitting openings of the light reflection layer or the light absorption layer formed on the surfaces of the pair quartz glass substrates, which are located on the non-joining side, along a direction in which a fluid flows in the fluid passage.

7. The micro fluid passage element according to claim 5, wherein a recessed portion is provided in the openings made in the light reflection layer or the light absorption layer, in an inner side of the fluid passage of the quartz glass substrates.

8. The micro fluid passage element according to claim 2, wherein a convex shaped projection is provided on at least one of the surfaces of the quartz glass substrates, which are located on the non-joining side.

9. The micro fluid passage element according to claim 2, wherein a film having a low light transmitting rate is formed on the surfaces of the quartz glass substrates, which are located on the non-joining side, and at least one light transmitting window is formed at positions sandwiching the fluid passage.

10. The micro fluid passage element according to claims **1** and **2**, wherein the silicon layer is made of polysilicon.

11. The micro fluid passage element according to claim 1, wherein a thickness of each of the quartz glass substrate is 1 mm or less, and both sides thereof is polished to be smooth, a thickness of the silicon thin film is 1 μm or less, and a thickness of the borosilicate glass thin film is 1 μm or less.

12. The micro fluid passage element according to claim 2, wherein a thickness of each of the quartz glass substrate is 1 mm or less, and both sides thereof is polished to be smooth, a thickness of the silicon thin film is 1 μm or less, a thickness of the borosilicate glass thin film is 1 μm or less, and a thickness of the silicon oxide film is 500 μm or less.

13. The micro fluid passage element according to claims **2** and **2**, wherein a depth or width of the piercing hole is 150 μm.

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